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ABSTRACT

This paper suggests that since continuing professional educators must address the ever present gap between new knowledge and practitioner competence, accurate identification and prioritization of practitioners' educational needs must be maintained on a continuous basis. Describing an adult education agency as an open system whose output depends on its input, the paper presents an educational needs assessment model employed by the Office of Continuing Medical Education, University of Michigan Medical Center. In addition, the paper defines educational needs based on Bradshaw's concept of felt, expressed, comparative, and normative sources and Knox's need appraisal model; describes data collection techniques for defined need areas; describes development of a coding system and transformation of data into packaged usable form; outlines applicability of the educational needs assessment model to other continuing professional education programs; and discusses limitations of the model. Charts and diagrams are included in the body of the paper and a bibliography appears at the end. (Author/LMS)

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A MODEL (BASED UPON OPEN SYSTEMS ORGANIZATIONAL THEORY) FOR CONTINUOUS EDUCATIONAL NEEDS ASSESSMENT IN CONTINUING PROFESSIONAL EDUCATION PROGRAMS

(A Paper Prepared for the Adult Education Research Conference
Minneapolis, April 20-22, 1977)

BEST COPY AVAILABLE

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INTRODUCTION

Generally organizations are formed in response to a societal "need" or "want" which is perceived by one or more individuals. The major goal of the organization is to satisfy the identified need, but attainment of the organizational goal or satisfaction of the perceived need may result in termination of the organization. The need for continuing professional education maintains a different character. It is based upon a chronological gap between discovery of new knowledge or skills and application of the new knowledge or skills to professional practice. It is doubtful that that chronological gap between the discovery of new professional knowledge (skills) and its application to practice can ever be totally eliminated.

The task of the continuing professional education organization is to minimize the chronological gap between the creation and application of new knowledge. In order to execute the task successfully, the organization must place itself in the gap and monitor the changing circumstances (new knowledge and skills) as well as the existing circumstances (present knowledge and skills of practitioners). Failure to monitor either set of circumstances accurately can result in irrelevant information to use in educational programming and a decrease in program participation.

This paper outlines a needs assessment model that functions as a monitoring device. It provides definitions of educational need, describes collection and processing of data, and discusses limitations of the presented model.

BACKGROUND

Adult education is learner-oriented. The program development models of major theorists, such as Houle,[1] Knowles[2] and Knox[3], illustrate that emphasis.

In The Design Of Education Houle[4] states, "that since men and women know what they need to learn, the task of the educator of adults is to discover what it is and provide it for them." Both Knowles and Knox accept that credo in their models where "diagnosis of needs for learning"[5] and "clientele analysis/needs assessment"[6] are discussed. The effectiveness of devised programs is partially dependent upon accurate identification of learner needs. Adults demand relevant information. Programs and projects that provide less cannot be completely effective.[7]

Knox[8] defines educational need as a gap between a present, or initial, or existing set of circumstances and some changed set of circumstances. These circumstances can be specified in terms of knowledge, performance, and attitudes, each of which is a component of competence. The changed set of circumstances may be described in terms of how the individual and/or someone else would have the individual's knowledge, performance, and attitudes differ from the initial set of circumstances. For any individual, these gaps are in a constant state of flux, shifting in number, magnitude, and importance throughout the life cycle.

Bergevin[9] states that "an effective program of adult education should consider the needs and related interests of the adult learner and attempt to discover and meet his real needs as well as the needs of his social order." The social setting of the adult education agency is one of interraction with the individual and the community (environment). Katz and Kahn[10] have observed:

> Social organizations are flagrantly open systems in that the input of energies and the conversion of output into further energic input consist of transactions between the organization and its environment.
>
> All social systems, including organizations, consist of the patterned activities of a number of individuals. Moreover, these patterned activities are complementary or interdependent with respect to some common output or outcome; they are repeated, relatively enduring, and bounded in space and time. If the activity pattern occurs only once or at unpredictable intervals, we could not speak of an organization. The stability or recurrence of activities can be examined in relation to the energic input into the system, the transformation of energies within the system, and the resulting product of energic output.

The adult education agency (organization) is an open system. The effectiveness of the agency's programs (output) depends upon the support it receives (input) for decision-making and other activities (throughput) relative to future programming outcomes (output).

Effective continuing professional education programs are dependent upon timely and effective dissemination of significant information to practitioners whose interest and participation support the organization. Mort Gordon[11] states:

> One of the best kept secrets in higher education is the extent to which the adult student pays for his own education. The largest extension program in the country has gone about as far along this road as possible. The program is more than 100% self-supported! Student fees not only pay for all direct program costs and indirect administrative costs associated with the program, but payments that include interest on money borrowed from the University Regents to refurbish classroom and conference facilities, plus the costs of campus and ordinary police service, plus -- and this does not cause the gorge to rise a bit, even in the most controlled corpus, the university's share of the cost of extension staff retirement benefits.

The agency dependence is not limited to the financial realm. Change in learners' performance, attitudes, and/or knowledge (output of the agency) goes into the community and returns to the organization as input which aids in decision-making (throughput) processes regarding subsequent program offerings. Immediate feed-back concerning learner response is also input to the adult education agency.

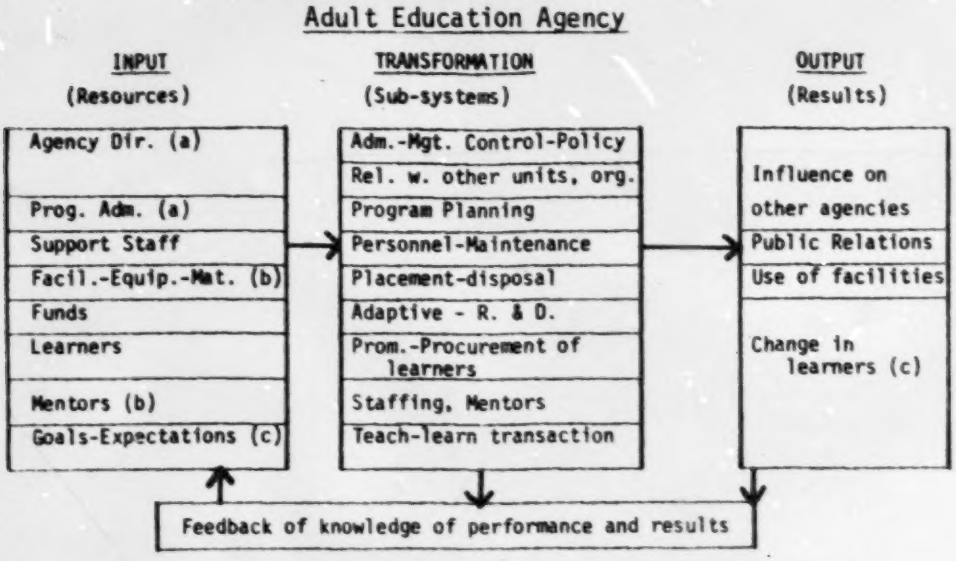
The entropic process is a universal law of nature in which all forms of organization move toward disorganization or death.[12] To survive, open systems must move to arrest the entropic process; they must acquire negative entropy. It is incumbent upon the adult education agency to import more energy from its environment than it expends.

Organizational functioning is dependent upon the integration of a number of subsystems. The "production subsystem" is concerned with work that gets done. The "supportive subsystem" is concerned with providing a continuous share of production inputs to the organization. The "maintenance subsystem" is directed at "insuring the availability of the human energy which results in role performance. The

'managerial subsystem' is concerned with the direction, adjudication, and control of the many subsystems and activities of the structure."[13] The "adaptive subsystem" is concerned with facilitating appropriate organizational change in response to demands of the constantly changing environment.

Alan B. Knox[14] provides a schematic representation of a basic systems model of adult education agencies. (See Figure 1.) Adult education agencies are organizational units whose primary purpose is to develop and supervise educational programs aimed primarily at adult part-time students. He identifies two types of adult education agencies. First, "units of educational institutions such as schools, community colleges and universities." Second, "units within larger organizations the primary purpose of which is something other than education in the usual sense."[15]

FIGURE 1. BASIC SYSTEMS MODEL*



NOTES: *This diagram presents the basic interrelationships between the four major components of input, transformation, output, and feedback. The categories within each major component indicates specific components, many of which are contained in other more detailed diagrams.

(a) Also serve as means for providing input of professional knowledge regarding administration of adult education agency.

(b) Subject matter knowledge provided by library and educational materials, and by mentors whose professional knowledge also includes effective teaching of adults.

(c) Learner's performance and achievement is part of a specialized feedback loop that includes mentor and agency goals, and expectations of various groups.

The production, supportive, and maintenance subsystems do not insure survival of the organization in a changing environment. Except for the functions of procurement and disposal, these systems face inward; they are concerned with the functioning of the organization as it is rather than with what it might become.[16] The adaptive

subsystem provides opportunity for a continual flow of knowledge to the organization. It may function as a monitor of change within the whole of the organizational environment tapping both internal and external data bases.

Figure 2 illustrates subsystems and general activities within each subsystem as they related to the organization of continuing professional education. Overlap of activities across subsystem boundaries is common but the extent and location of overlap are specific to the particular organization. For example, registration of learners may take place within the lower levels of the management, production, or maintenance subsystem.

FIGURE 2. SUBSYSTEMS AND ACTIVITIES

I. Management Subsystem: Administrative activities.
   - A. Control and coordination of formal decision-making.
   - B. Determination of policy.

II. Production Subsystem: Program planning activities.
   - A. Definition of organizational parameters as they relate to program planning.
   - B. Translation of identified needs into formulated objectives.
   - C. Transformation of content material from appropriate resources to viable context.
   - D. Design of learning activities.
   - E. Instruction.

III. Supportive Subsystem: Procurement and disposal activities.
   - A. Acquisition of hardware for program presentation:
     1. Housing
     2. Equipment
     3. Resource materials
   - B. Procurement of learners for program presentation:
     1. Public relations with community at large
     2. Marketing of program
     3. Contacts with appropriate professional societies
   - C. Relations with parent or sponsoring organization.
     1. Formal written reports
     2. Other formal and informal communications

IV. Maintenance Subsystem: Personnel and registrant related activities.
   - A. Recruitment of personnel.
   - B. Reward of personnel activities.
   - C. Sanction of personnel activities.
   - D. CEU record-keeping.
   - E. Financial bookeeping.

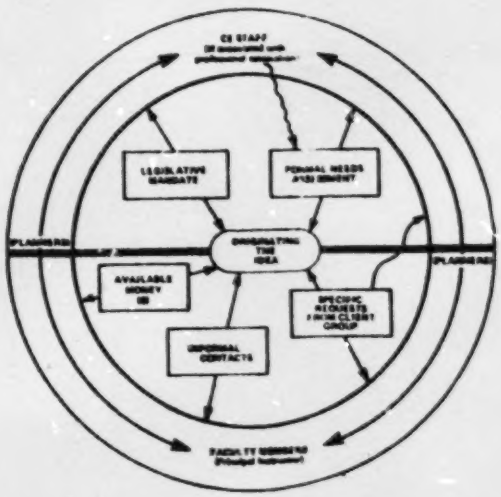
V. Adaptive Subsystem: Anticipatory activities.
   - A. Basic research.
     1. Inner-organizational exploration
     2. Inter-organizational exploration
   - B. Operational research.
     1. Assessment of professional educational needs.
     2. Assessment of community needs

The educational needs assessment process may function as an adaptive subsystem. Through basic and operational research, needs assessment may act as a sensing device attuned to cultural norms, values, and attitudes, as well as performance and knowledge of marginal and immediate organization participants. Gaps between existing and changed knowledge, performance, and attitudes may be identified and better informed decision-making facilitated within the organization as an outcome of accurate needs assessment.

PROGRAM ORIGIN: FORMAL AND INFORMAL NEEDS ASSESSMENT

Pennington and Green[17] examined program development processes across six professions in eleven major institutions of higher learning. Results indicate that the planning process clusters around six groups of activities. The cluster that includes needs assessment appears in Figure 3.

FIGURE 3. PROGRAM ORIGIN



Several origins are found in this cluster. The idea or request for the program came to or from a person on the campus. Identified origins were: 1) a formal needs assessment; 2) requests from a client or client group; 3) the availability of project monies; 4) legislative mandate; and 5) suggestions from campus faculty and staff. After outside requests were received by the person on campus, clarification of the topic began. This process of clarification led to the second cluster, "Developing The Idea".

A number of formal needs assessment methodologies may facilitate the origination of an idea. Survey research is one of the most commonly employed. Frequently this methodology is directed more toward preliminary exploration than educational needs assessment per se. It is generally constructed to provide a clientele analysis. That is, it attempts to identify the professionals' characteristics and attitudes toward continuing professional education. It is aimed at the acquisition of information regarding professional specialty, type of practice, setting, recency of graduation from professional school, whether or not continuing professional education should be

required, the times and places most convenient for effecting target group attendance, estimates of time spent by professionals in continuing professional education, and types of continuing professional education activities in which potential participants engage their energies.

Experimental, quasi-experimental, and correlational studies have been conducted with the intent of assessing needs, but as has been the case with most formal needs assessment activities, these studies have been episodic in nature. The result of episodic ventures has been the short-lived relevance of acquired data.

In practice, needs assessment is predominantly an informal process. Program planners and administrators depend upon experts (usually faculty members) to tell them what the educational needs of practicing professionals may be. While these authoritative sources may provide a continual flow of information to planners, it is often the case that normative assessment is based upon educated guess-work of academic professionals who are isolated from the delivery sites where most program participants provide services. Academic professionals may be aware of how professional services are delivered in communities, but those sensitivities are often lost during the design of a complex continuing education program concerned with fulfilling special faculty interests and accreditation requirements where imposed.

Informal needs assessment is also characterized by solicitation of potential learners' opinions. Discussions and interviews are often carried out with the intention of establishing what the practicing professionals feel they want or need. These activities may provide a continual flow of information, but they are limited by the subjective scope of the potential learner. That is, the learner's perception of what he may need is limited by his knowledge of what exists. This same limitation is inherent to the "self-assessment" process which is also a common informal needs assessment procedure.

PURPOSE AND MODEL

The purpose of this needs appraisal project is to assist program planners working within the auspices of the Office of Continuing Education, University of Michigan, Medical School to make effective design decisions regarding the course, Family Practice Review. There are several assumptions underlying this statement of purpose.[18]

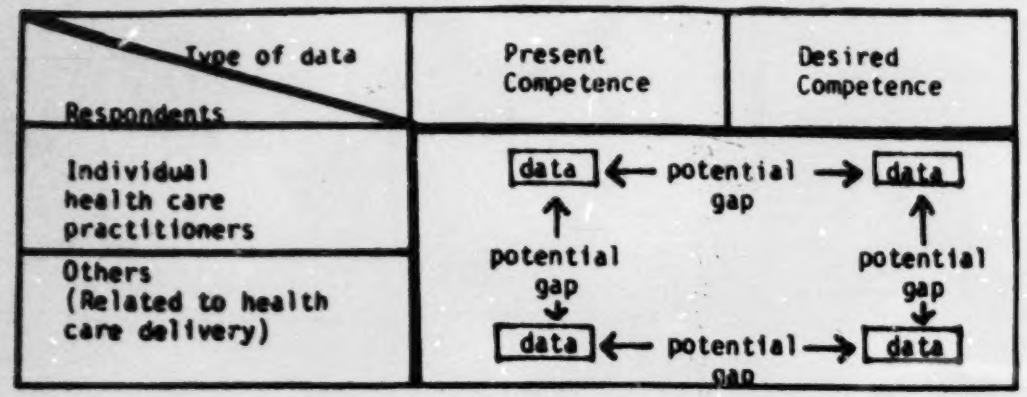
1. Educational needs assessment is a critical link in the chain of events from patient care through continuing education to improve patient care.

2. Attending Continuing Medical Education activities will maintain and enhance the quality of medical care related to the participant's practice.

3. It is within the power of a need appraisa' study to specify the extent to which educational needs focus on lack of knowledge or lack of competence.

The needs assessment model requires collection of four types of data. (See Figure 4.) The potential gaps are crucial to identifying educational needs.[19]

FIGURE 4. MATRIX OF POTENTIAL NEEDS



Within this matrix, information about present circumstances (knowledge and skills to attain) is gathered by activities of both self-appraisal and other data sources in/or served by the profession, (e.g., academic physicians, health care delivery research, literature, etc.) These others can also comment on the general quality of health care delivery, and on issues and trends in health care delivery in communities that reflect emerging needs for continuing education.

The gaps between the statements of current circumstances and desired circumstances as perceived by the individual health care practitioners and by "others" help to identify where continuing education programs can best serve to:

(1) improve health care professionals' performance for self-betterment; and

(2) improve patient care in the office, clinic, and community hospital.

Information regarding educational methods and formats, (e.g., lecture, consultation, on-site course presentation versus in-house medical complex [Towsley Center] offerings, etc.) is gathered conterminously within each category. Use of all four data types is essential for concise decision-making during the selection of topics and design of education activities.

The following need categories are derived from Bradshaw's, "The Concept Of Social Need"[20]:

Normative needs are those which the "experts" define as a need in any given situation. In many instances these experts are the ones who set acceptable or desired standards of practice and then compare them with current practice as they perceive it. If an individual or a group of individuals fall short of the established standards, they are identified as being in need.

A felt need is often equated with want. Health care practitioners may be asked what they need or if they feel they need something which is suggested to them. For example, a physician may be asked "Do you want a slide-tape program on the most recent and effective treatment of Dermatophytosis?"

Expressed needs are felt needs turned into action. These are "demands". These needs occur when the individual confronts one or more gaps, the closing of which would be facilitated by major new learnings, and decides to close the gaps by taking the initiative in attempting to alter his own knowledge, skills, and attitudes. One strategy the person might select is the solicitation of assistance of others, perhaps a CME program, to help him close the gap. These needs must be addressed in any responsive CME program.

Comparative needs are found by studying characteristics of individuals, groups, or communities who are receiving a certain level of health care and comparing this with areas having similar characteristics but a different level of health care. For example, Family Physicians in the rural southwestern region of Michigan may be experiencing a 15% recurrence rate following treatment of mononucleosis. Their counterparts in Michigan's rural "thumb area" may be experiencing only a 10% recurrence rate following treatment of the same disease. A comparative analysis of recurrence rates indicates a possible educational need of Family Physicians in the southwestern region.

Another manifestation of comparative needs assessment is careful examination of continuing medical education programming efforts of sponsors with similar medical school resources and populations of participants. Examination of appropriate information may identify a learner need which has not been attended by current programming efforts.

Assessment activities within normative, felt, expressed and comparative need categories provide sources wherein all five program origins listed by Pennington and Green are accessible. Through "1) formal needs assessment; 2) requests from a client or client group; 3) the availability of project monies; 4) legislative mandate; 5) suggestions from campus faculty and staff" can all be monitored and logged within the proposed model.

PROCESS AND CODING

It makes little sense to provide program planners with coded parcels or tidbits of scattered information. The task of sifting through material to make sense of it would be arduous, time consuming, and inefficient use of a committee's energies. An efficiently operating continuous needs assessment component should provide organized information about priority needs for course planning and other program development decisions. Carefully summarized or packaged information can facilitate the planning committee's efforts in making content/instructional design decisions and support better informed administrative decision-making as well.

There are four major steps to this needs assessment process: 1) define; 2) collect; 3) analyze; and 4) use.[21] The core of these steps is the discovery of gaps; gaps between the current circumstances and the changed (desired) circumstances. The need appraisal is aimed at discovering and locating gaps and decisions of how to go about filling them. The cumulative analysis of data received from the individual and others and the evaluation of current CME programs provides for the establishment of priorities and strategies in program development.

The problem definition stage is the beginning of the need appraisal procedure during which the researcher narrows the scope of the target population and problem areas to be studied. Some limits must be set regarding the categories of persons to be included in the need appraisal process. This background information about the target population provides the basis for the preliminary specification of the categories of people, the kinds of practice areas and the problem areas on which to focus the need appraisal. To the Office of Continuing Education the target population is practicing Family Physicians in the State of Michigan. The problem areas to be studied include: 1) physicians' working knowledge vs. existing knowledge; 2) physicians' skills vs. innovated and/or standardized task performance; and 3) physicians' attitudes toward continuing medical education, as they relate to the educative process.

The data collection stage consists of the collection of two types of information: current circumstances of the target population of potential participants, and the changed circumstances to which they aspire or which others expect of them; and the collection of information from two types of people: participants and others. Participants include those who are within the target population; others include successful practitioners, subject-matter specialists, educators, statistical data, literature, and other sponsors of CME activities. The categorization of normative, felt, expressed, and comparative needs provides clearer delineation of sources and more specific criteria for directing data collection. Sampling sources for the Office of Continuing Education needs assessment include but are not limited to appropriate faculty, practicing physicians, professional societies, research data, relevant literature, evaluative information regarding previous educational activities, and other sponsors of continuing medical education.

The data analysis stage consists of coding of data and the comparisons between the four types of information that results from the data collection. The description of current circumstances and changed circumstances, leads to the summary of other's views, and participants' views. Here are the perceived gaps by others and by the participants. The evaluation of on-going programs adds to the explanation of discrepencies between the four summaries. Information gathered within the needs assessment model is coded in compliance with the system adopted by the Office of Continuing Medical Education. Analysis is conducted across need categories and within the potential needs matrix identified gaps are recorded.

The final stage occurs when the results are used as input to the program development process. Priorities of desirability and feasibility must be applied as a basis for the selection of the educational needs. The willingness to change by closing the gaps between current and changed circumstances, and the needs of the sponsoring agency (Office of Continuing Education) lead to the selection of needs and to decisions regarding strategies for program development. Since selected needs relate to an on-going program (Family Practice Review) the need appraisal information may modify it or lead to development of a new or pilot program. Results may eventually be used to identify trends and project needs as the basis for planning. The Office of Continuing Education affords highest priority to those needs which are clearly suited to educational intervention, which occur most frequently and consistently across the four need categories, and which fully operationalize the matrix of potential needs. Feasibility is limited by the boundaries, resources, and goals of the organization. That is, within the scope of resources necessary for satisfaction of identified needs, those attainable by the Office of Continuing Education are mobilized in order to satisfy those needs.

Many data sources may be identified within each of the need categories. Necessary to analysis of the data is recognition of the kind of need being identified and the role status of the source stating the need. Development of a comprehensive coding system to use in understanding acquired information is a crucial task, as is development of a screening mechanism so that priority needs can be identified for use in designing effective CME programs with available resources.

For Office of Continuing Education needs assessment purposes, a viable coding system:

1. Accommodates listing by disease entity or health care problem, (e.g., diabetes mellitus, rheumatoid arthritis, poliomyelitis prophylaxis, and health education counseling).

2. Identifies category of need, (i.e., normative, felt, expressed, and comparative).
3. Accommodates focus of the identified need, (i.e. etiology, diagnosis, treatment).
4. Identifies the source of the information, (e.g., academic physician, practicing physician, professional journal, other CME sponsor, health care research, program participant, or professional society.
5. Accommodates listing of respondent and type of data, (i.e., individuals' present or desired competence and others related to health care delivery present or desired competence).

The World Health Organization's "International Classification of Diseases" provides an extensive listing of disorders and health care problems. The British Royal College of General Practitioners' adaptation of the ICDA code modifies the number of major categories of disease classification to twenty-two. It also reduces the number of problem-oriented diagnoses to 908.[22]

Figure 5 illustrates three major categories of disease classifications with examples of descriptive diagnoses for each category.

FIGURE 5. MAJOR CATEGORIES WITH DESCRIPTIVE DIAGNOSES AND RCGP NUMBERS

CATEGORY 1. COMMUNICABLE DISEASES
RCGP NUMBER AND DESCRIPTIVE DIAGNOSES
25 - viral warts 4 - gonorrhea 2 - tuberculosis
CATEGORY 2. NEOPLASMS, INCLUDING RETICULOSIS
RCGP NUMBER AND DESCRIPTIVE DIAGNOSES
70 - breast (benign) 67 - leukemia, all types 53 - colon (malignant)
CATEGORY 3. ALLERGIC, ENDOCRINE, METABOLIC, AND NUTRITIONAL DISORDERS
RCGP NUMBER AND DESCRIPTIVE DIAGNOSES
91 - diabetes mellitus 86 - asthma 88 - hyperthyroidism

Utilization of the RCGP code enables the needs assessor to list as many as seventy-seven characters describing each diagnosis. All five essentials for a viable coding system may be attended via addition of descriptors (characters) regarding listed diagnoses. For example, viral warts (RCGP #25) by virtue of its listing satisfies the first requirement mentioned above for a viable coding system.

By attaching a symbol corresponding to category of need, (e.g., 1 = normative, 2 = felt, 3 = expressed, 4 = comparative), the second requirement is satisfied. Attachment of coded figures, (e.g., 1 = etiology, 2 = diagnosis, 3 = treatment), serves to fulfill the third requirement, and the fourth requirement may be discharged in the same manner, (e.g., 1 = academic physician, 2 = practicing physician, 3 = professional journal, etc.) The fifth requirement is attended by a matrix column, (e.g., 1 = individual-present competence, 2 = individual-desired competence, 3 = others -present competence, 4 = others-desired competence).

Figure 6 illustrates in coded form the felt need (desired competence) of a practicing physician for information on treatment of viral warts.

FIGURE 6. SAMPLE OF CODED INFORMATION

CATEGORY 1. COMMUNICABLE DISEASES					
RCGP #	Descriptive Diagnosis	Need Category	Focus	Source	Matrix
25	viral warts	2	3	2	2

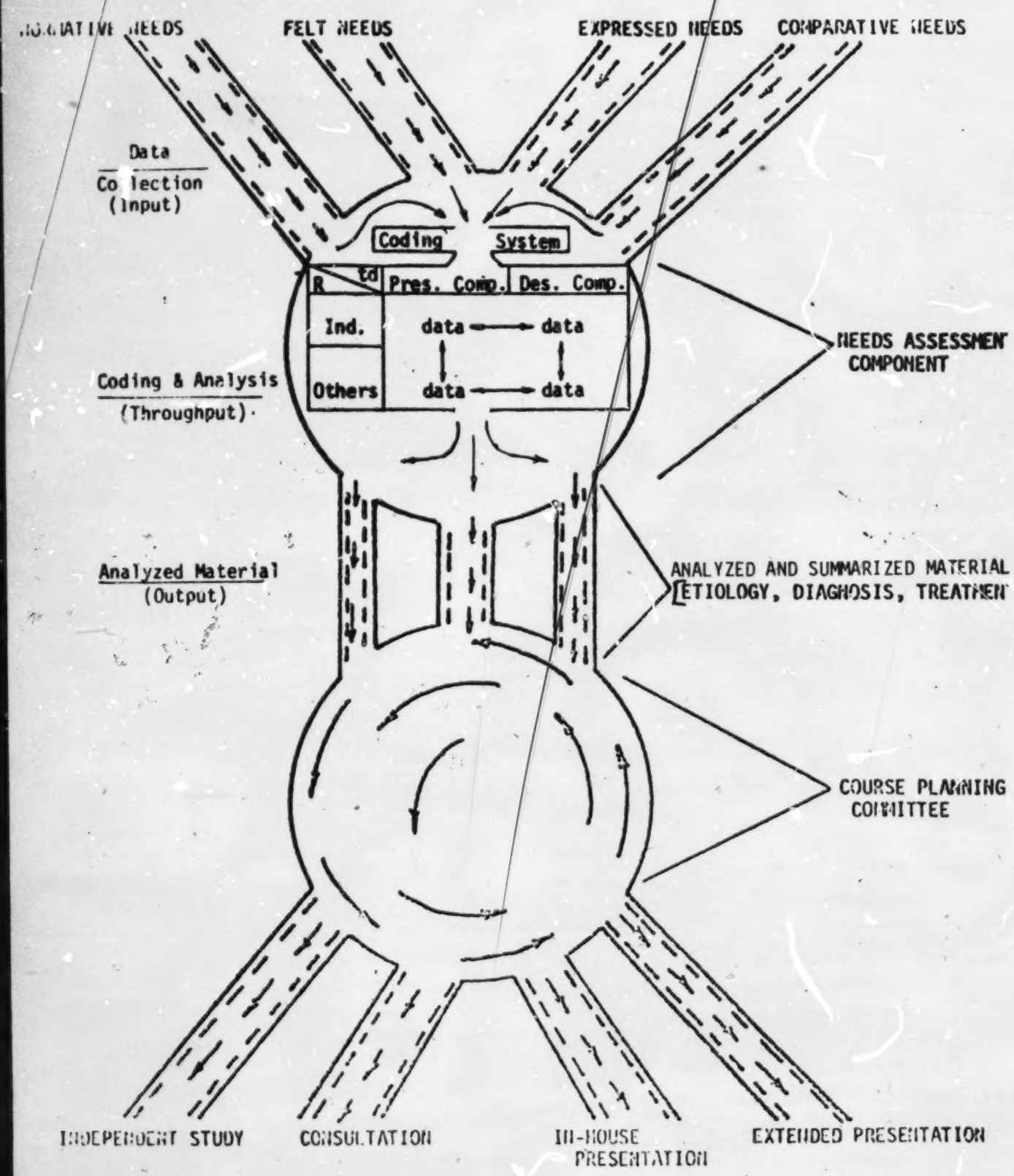
This coding system is a vehicle to easy access and manipulation of acquired data. It accommodates incidence and data collection over an indeterminate period of time. Short range benefits include easy access and manipulation of data with brief search time expenditures for both researcher and computer. Longer range benefits include the accumulation of a rich data base and the option of adding descriptive diagnoses and additional descriptors when necessary. The longer range benefits indicate possibilities for trend identification and projected needs assessment.

In short, the RCGP code facilitates analysis. Analysis is throughput of the needs assessment component. Analyzed summary data categorized according to etiology, diagnosis, or treatment is output of the component. Data collection is input to the needs assessment component. Needs assessment functions as an adaptive subsystem in that it imports information from the greater organizational environment, transforms it into usable form and exports that utilizable information to the program planning component (productive subsystem), particularly, and across subsystem boundaries to the organization as a whole. (See Figure 7.)

PRELIMINARY FINDINGS

Data concerning "present competence" of practicing physicians is the most difficult to obtain. Practicing physicians may provide felt need data but the expression of a felt need is not synonymous with an expressed incompetence. "Others related to health care delivery" may provide opinions of present competencies but they are precisely opinions regarding the practice of others and those opinions cannot fully operationalize the present competence of "individual practitioners" variable.

FIGURE 7. EDUCATIONAL NEEDS ASSESSMENT PROCESS MODEL



*Broken line indicates contemporaneous gathering and presentation of instruction design materials.

Medical care audits are studies of specific task performance generally conducted in hospital settings. Acceptable levels of performance are set by physicians participating in the audit or hospital administrators, and practice deficiencies are measured against those levels. For example prior to examination of patient charts, physician participants may agree that acute appendicitis should be correctly diagnosed 95% of the time at the patients' first related visit. Audit of patient charts may reveal that hospital staff physicians meet the performance criteria only 80% of the time. Such a finding is normally followed-up with an educational activity directed at increasing the physicians' diagnostic skills of acute appendicitis. Since performance objectives vary from organization to organization, these procedures provide little information which may be applied across medical specialty lines, (e.g., Family Physicians or Internists). Professional groups such as Professional Standards Review Organizations and the Joint Commission on Hospital Accreditation assume responsibilities for monitoring performance standards and encourage audit procedures in hospital settings, but findings are task specific, parochial and not subject to public disclosure.

Minimum standards of professional competence have not been set by Family Physicians as a medical specialty group. The American Board of Family Practice, education commission which is part of the American Academy of Family Physicians, administered its first recertification examination in October of 1976. Results of the examination and minimum pass/fail criteria have not been released. The recertification procedure consists of four elements: 1) continuing medical education requirements [300 hours for previous six years]; 2) assessment of licensure status [candidate must hold unrestricted license]; 3) cognitive examination [one-half day written examination covering new advances in fields applicable to Family Practice with special emphasis on the previous ten years]; and 4) office record review [each candidate fills out questionnaires based upon his own review of charts for which he bears direct patient care responsibility].[23] Information relating to individual practitioners' present competence may be generated by this examination, but, again it is currently unavailable.

The "desired competence" of individual health care practitioners is accessible through a number of sources. Surveys of felt needs have proven to be the most readily available. Measures of felt needs and instructional design preference are obtained via Office of Continuing Education post course summaries as well as interviews with course participants.

Expressed needs of individual health care practitioners often take the form of letters of "request for topics" to the Office of Continuing Education. Those requests, requests from groups of physicians, and the study of enrollment statistics for various courses, workshops, and optional educational activities function as indicators of expressed need and desired competence.

Given the relative absence of standardized competency criteria and the paucity of research regarding physician clinical performance, the comparative need category is particularly useful to the "others related to health care delivery" matrix category. It may be less useful to "individual practitioners" whose assessment is limited by his/her comparative data base.

Comparative examinations of course catalogues are indicators of major topics to present. They are particularly useful as a checking device for program planners. Program outlines and assorted journals provide suggestions and research data concerning the effectiveness of particular instructional methodologies. Regional mortality and

morbidity rates serve as monitors of disease occurrence within geographic zones, but they do not function as indicators of individual practitioners' competence. They may indicate outbreaks of certain disease entities or disorders which may necessitate an educational intervention, but mortality and morbidity factors alone do not indicate educational need.

Expressed needs of others related to health care delivery come from the Michigan Academy of Family Physicians, related professional societies, and examination of enrollment statistics regarding educational activities of associated professionals and/or para-professionals, (e.g., Family Physicians' nurses and Physician Assistants). Present and desired competence information is obtained from these sources.

Normative and felt needs of others related to health care delivery are available through examination of lecture and course outlines, interviews with faculty and other experts, completed opinion surveys, journal articles, and other relevant literature. Present and desired competence data is more easily obtained in these categories because the sources are less apt to be threatened by the assessment process. Sources are called upon to comment regarding the competence of others.

Figure 8 illustrates the process and flow of information through the needs assessment component. Information relevant to diabetes mellitus is exemplified.

Of all possible topics (disease or health problems) suitable to continuing medical educational intervention, one hundred-seventeen Family Physicians named treatment of diabetes mellitus most frequently in felt and expressed need categories. Physicians were participants in the January, 1977, Family Practice Review. Normative sources in the University of Michigan Medical School supported that potential need through interviews, research, and presentation outlines. U.S. Department of Health, Education, and Welfare health statistics indicate that better than 10% of the American population suffers from diabetes mellitus.[24] Comparative examination indicates a higher percentage of occurrence for the State of Michigan. Review of sixty-two medical journal articles and related research works published between 1939 and 1976 indicates steadily growing concern and shifts in philosophies regarding etiology, diagnosis, and treatment of the disease. Priorities for allocation of National Institute of Health basic and applied research monies also reflect the documented medical concern.

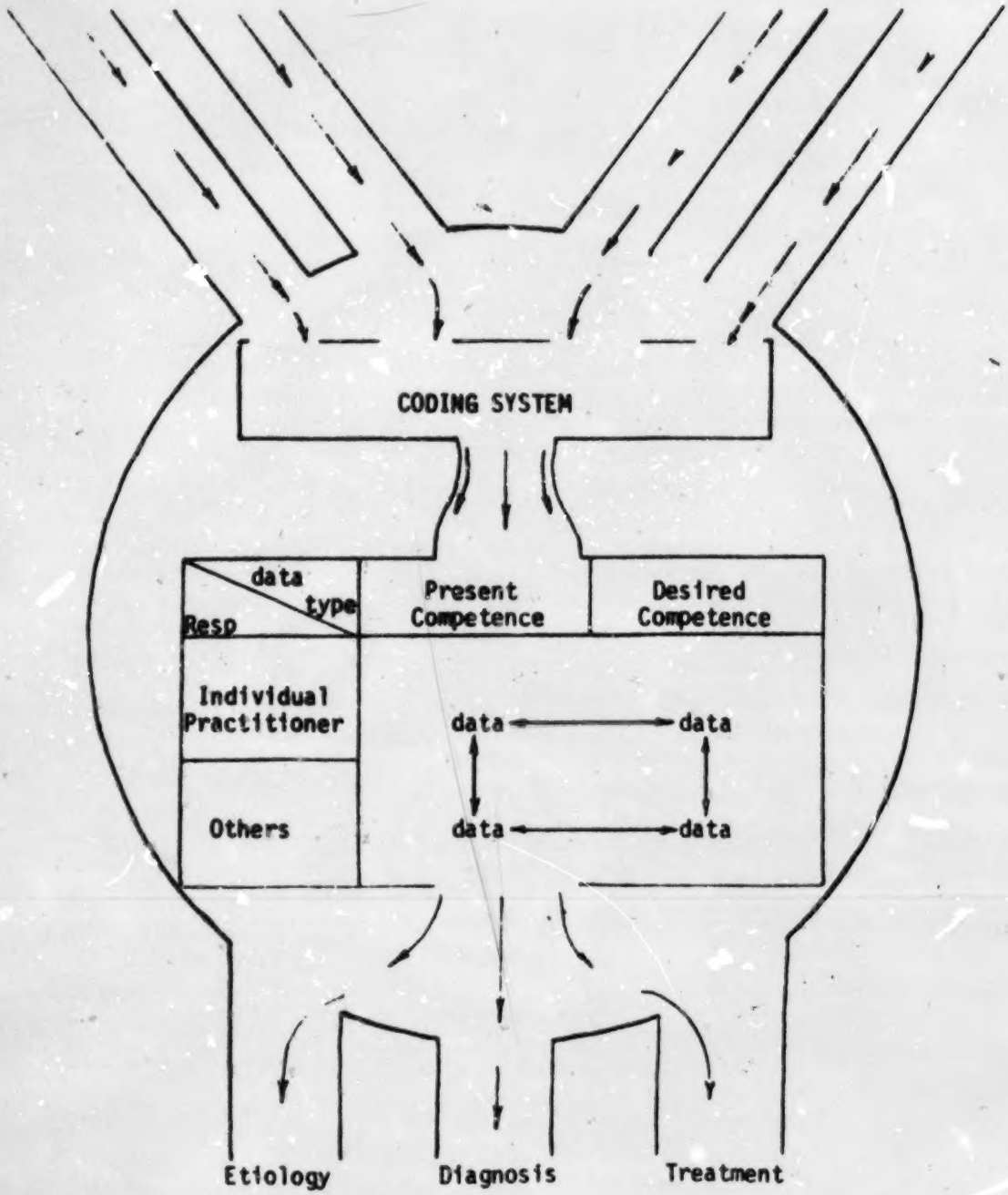
Evaluations of optional educational activities, post course summaries, and related research indicate physicians prefer lecture method with small workshops for skills practice in formal education activities. Post course summaries and other research directed at clientele analysis find mediated learning the least preferred instructional format.

The "Michigan Physician And His Continuing Education"[25] provides detailed statistical groundwork for continued clientele analysis. The study investigated seven areas of major concern to continuing medical educators and provides the framework, wherein subsequent clientele analysis is conducted. Some of the more important findings are:

1. Most doctors feel it is of great importance to have the opportunity to utilize their present skills and to acquire new knowledge and skills.
2. Most doctors subscribe to three or four medical journals and spend about three hours per week reading them.

FIGURE 8. NEEDS ASSESSMENT COMPONENT:
PROCESS AND FLOW OF INFORMATION FROM NEED CATEGORIES

Normative	Felt	Expressed	Comparative
interview	post course summary	post course summary	journal articles
discussion & conference	survey	enrollment statistics	research papers
educational presentation outlines	interview	communications with professional societies	other course catalogues
journal articles	discussion	education monitors of professional societies	mortality & morbidity rates
research papers			federal research priorities



3. The major obstacles to engaging in more formal education are the constraints of practice: lack of time, schedule conflicts, difficulties in obtaining a covering physician.

The study also gives special attention to General Practitioners (recently developed into the medical specialty of Family Practice) and listed six major findings. Three of those most significant are:

1. General Practitioners (Family Physicians) are more positive than others about the typical postgraduate course and about the education available in the state.
2. Forty-five percent of the general practitioners (Family Physicians) in the statewide sample were over the age of 55.
3. General Practitioners (Family Physicians) attend fewer professional meetings than do others and are less positive about their educational value.

Within the needs assessment model, collected information regarding clientele analysis has not conflicted with the major findings listed above. Although clientele analysis has not been the major thrust of needs assessment activities, it has been attended through appropriate items on post course evaluation forms and review of demographic data.

LIMITATIONS

Resources used in data collection and analyzed within the matrix are primarily existing data sources. Consequently, the relative inaccessibility of information regarding present competence of individual practitioners restricts the performance of the model. The model does not impose restrictions on research, but data gathering activities are presently directed at existing information sources.

Current needs assessment efforts are conducted from the delivery system perspective. Emphasis is placed upon the educational needs of the provider. Efforts directed from a greater health care perspective necessitate the input of recipients in order to facilitate identification of needs within that expanded perspective.

Analysis of acquired data requires two types of professional expertise: 1) clinical; and 2) educational. Clinical expertise is necessary for practice and subject matter insights. Educational expertise is necessary for insights into effective instructional and program design. The two requirements are not mutually exclusive. The nature of the educational task precludes that possibility. Construction of high quality educational activities is dependent in part upon the complementary relationship of subject matter and instructional design. While both forms of expertise are necessary to analysis, both forms may exist in the same resource person.

Criteria for selection of educational formats are not included in the needs assessment model. Educational design decisions are based upon accumulated data and nature of the educational need.

The process of prioritizing needs can be markedly improved by accessibility to data regarding "present competence". A taxonomy for weighting of information sources may then be developed and added to the coding system and analytic process. Output of the needs assessment component would increase as a result of such streamlining of throughput activities.

CONCLUSION

Ideas for continuing professional education programs originate from several sources which must be monitored on a continuous basis. The settings of the sources are diverse and necessitate a model for data collection which ensures acquisition of information from existing sources, as well as new sources as they become viable. Bradshaw's classification of need types provides an appropriate mechanism, wherein existing sources and emerging sources may be monitored. Formal and informal processes are accommodated by the model.

Collected information must be sifted through and analyzed in order to determine the educational needs of a particular professional group. Large amounts of information may be coded and applied according to the matrix of potential needs (Knox, Means, and Woods). Needs may be identified in the gaps between "present competence" and "desired competence". Application of data to the matrix facilitates uniformity in analysis of gathered data. Coding simplifies data management.

Of the four categories of need within the matrix, "present competence of individual practitioners" is the most inaccessible. Prioritization of educational needs is made more difficult as a result. Task specific studies do little to assist the prioritization process, and organization specific standards are not generalizable. However, the availability of these types of information would enhance the "present competence of individual practitioners" data base and improve the longer range possibilities for competency identification.

Continuous needs assessment serves an organizational function. To maintain itself and attempt to bridge the gap between existing and changed knowledge, skills, and attitudes, the continuing professional education agency must monitor both existing and changed circumstances. An effectively operating needs assessment component (adaptive subsystem) can provide two major organizational benefits:

1. The quality of subject matter and the design of educational activities can be more focused, more timely, and increasingly relevant.
2. The organization (continuing professional education agency) can use acquired information to continuously update organizational goals and objectives.

As a result of the first benefit, the continuing professional education agency may gain greater quantity and quality of input, since it is the interest and participation of practitioners which support the agency. Better informed administrative decision-making is a concommitant of the second benefit. Both outcomes aid in neutralization of entropic tendencies, since: 1) the open system must import more energy from its environment than it expends; and 2) miscalculated organizational goals do not address the needs of practicing professionals and undermine intended organizational purpose.

Abbreviated Notes

[1]Houle, 1972:46

[2]Knowles, 1970:54

[3]Knox, 1976

[4]Houle, 1972:7

[5]Knowles, 1970:54

[6]Knox, 1976

[7]Mc Elreath, 1976:232

[8]Knox, 1973:K73

[9]Bergevin, 1967:141

[10]Katz and Kahn, 1966:16-17

[11]Gordon, 1974:35-36

[12]Katz and Kahn, 1966:21

[13]Katz and Kahn, 1966:39

[14]Knox, 1967:3

[15]Knox, 1967:5

[16]Katz and Kahn, 1966:42

[17]Pennington and Green, 1976:17

[18]Israeli, undated copy

[19]Knox, Woods, and Means, 1974:6

[20]Bradshaw, 1974:184-185

[21]Israeli, undated copy

[22]Journal of Family Practice, 1967:68

[23]American Board of Family Practice, 1976: Addendum A

[24]Health: United States, 1975:559

[25]Mann, Kotre, et. al., 1970:981 - Series

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